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ABSTRACT

The science curriculum activities presented in this guide were developed as one component of a total career education demonstration project for Appalachian Maryland, and are intended for use as supplements to the total middle or junior high school curriculum. Introductory material lists career education concepts and outlines career and occupational development objectives. The body of the guide consists of the following sixteen science units: astronomy, chemistry, communications, ecology, energy (electricity), energy (heat), energy (nuclear), energy (sound), fluid pressure, geology, living things (general), living things (plant life), living things (animal life), living things (structures and functions of man), simple machines, and weather. Each unit relates career education activities to one or more concepts within the specific unit area. Career education activities are identified according to type of activity (e.g., research, field trip, puzzle, role play, experiment, report). Materials required for many of the activities are appended. (SH)

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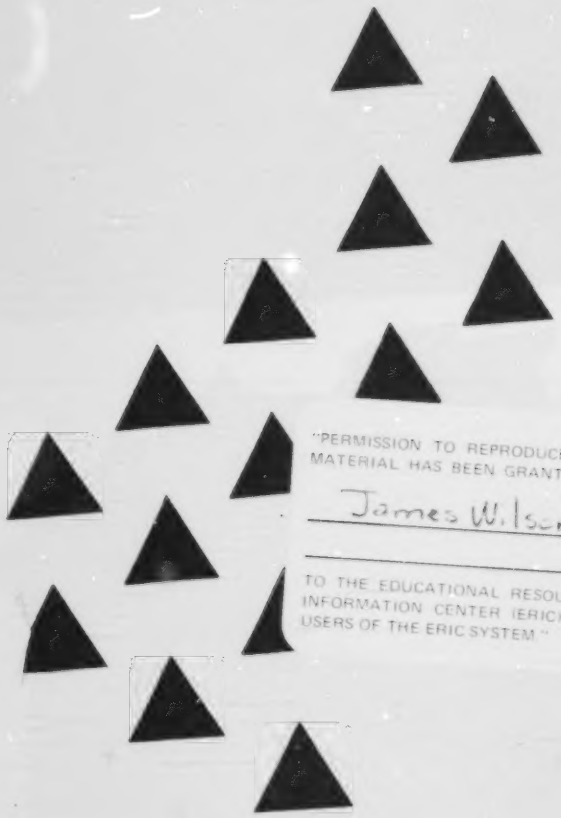
Career Education in Appalachian Maryland



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INVESTIGATION AND DECISION MAKING

SCIENCE

MIDDLE OR JUNIOR HIGH SCHOOL SUPPLEMENTAL ACTIVITIES

CE 012 374

The supplemental curriculum activities developed under this demonstration project make up one component of a total Career Education Demonstration Project for Appalachian Maryland.

Although the infusion of this material into curriculum areas is felt to be most important, we are not suggesting that these materials be used as texts. This material, when used supplementally, should add greatly to our total education curriculum.

In his position paper, "An Introduction to Career Education", Kenneth B. Hoyt, Associate Commissioner for Career Education at the United States Office of Education, stated "If students can see clear relationships between what they are being asked to learn in school and the world of work, they will be motivated to learn more in school.

"There exists no single learning strategy that can be said to be best for all students. Some students will learn best by reading out of books for example, and others will learn best by combining reading with other kinds of learning activities. A comprehensive educational program should provide a series of alternative learning strategies and learning environments for students.

"Basic academic skills, a personally meaningful set of work values, and good work habits represent adaptability tools needed by all persons who choose to work in today's rapidly changing occupational society."

I feel that the material developed by this very competent and industrious task force does provide alternate learning strategies for students. I have seen many of these activities tried enthusiastically by teachers and received in the same manner by students.

Certainly, we do not feel that this material should remain in this form forever. I suggest to the educators who choose to use these activities that they change, critique, and create far beyond what they find printed here.

James W. Wilson

James W. Wilson, Director
Career Education Project

TRI-COUNTY CAREER EDUCATION TASK FORCE

Allegany, Garrett, and Washington Counties

Career Education Concepts

1. Careers are interdependent and should benefit society.
2. People work for rewards and satisfaction.
3. There are rules for all kinds of work.
4. Attitudes and personality factors have an effect on work, performance, and success.
5. Work has dignity and is worthwhile.
6. All work involves the production of either goods or services.
7. Most kinds of work require some skill or training.
8. People should contribute their particular talents and capabilities to the world of work.
9. People should adapt to technological and sociological changes which create or eliminate work.
10. Environmental and cultural factors determine the kinds of work available.
11. People's work affects their way of life.

SUMMARY OF

CAREER AND OCCUPATIONAL DEVELOPMENT OBJECTIVES

I. Prepare for making career decisions

- A. Know own characteristics relevant to career decisions
- B. Know the characteristics and requirements of different careers and occupations
- C. Relate own personal characteristics to occupational requirements
- D. Plan for career development or change

II. Improve career and occupational capabilities

III. Possess skills that are generally useful in the world of work

- A. Have generally useful numerical skills
- B. Have generally useful communication skills
- C. Have generally useful manual-perceptual skills
- D. Have generally useful information-processing and decision-making skills
- E. Have generally useful interpersonal skills
- F. Have employment-seeking skills

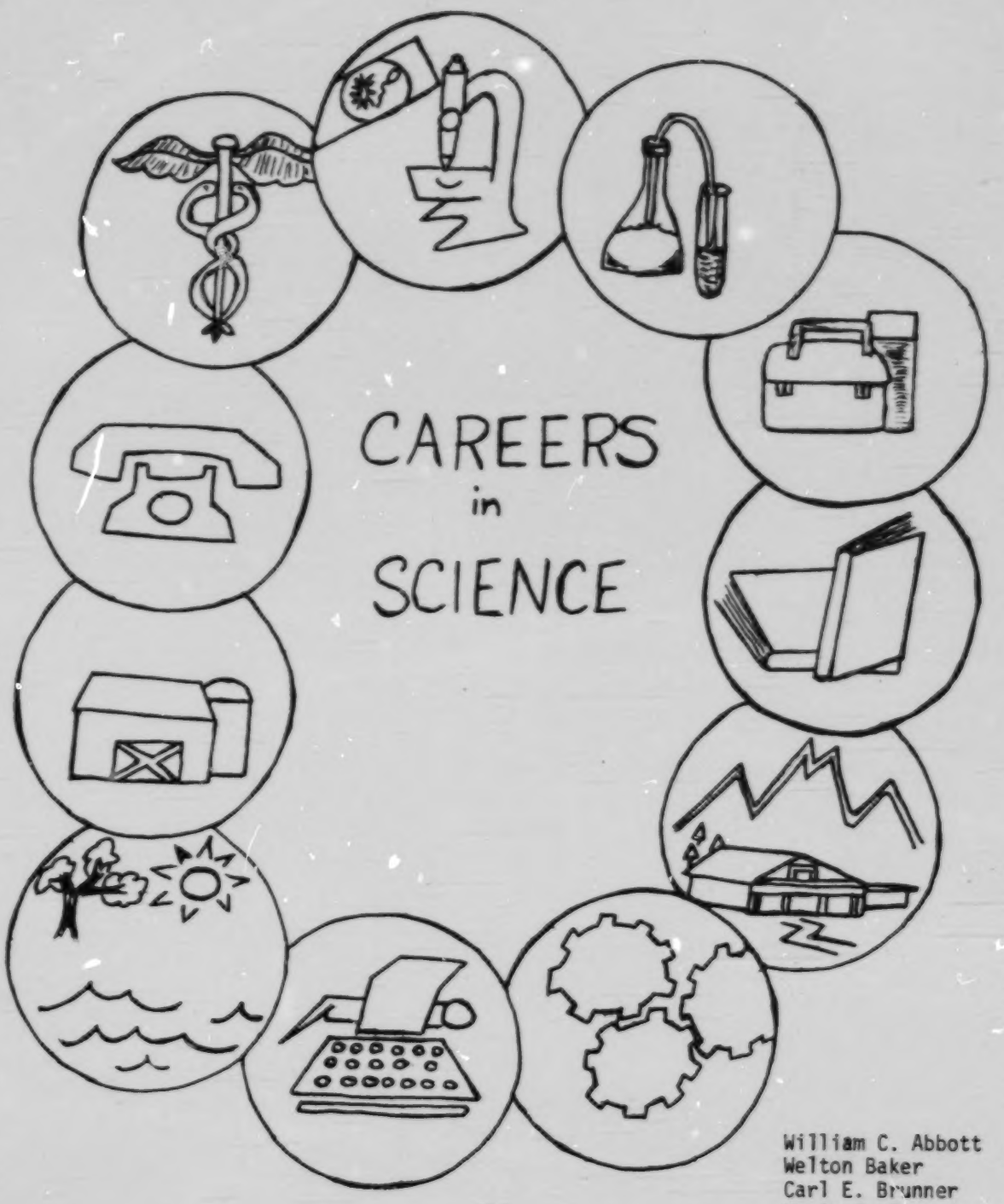
IV. Practice effective work habits

- A. Assume responsibility for own behavior
- B. Plan work
- C. Use initiative and ingenuity to fulfill responsibilities
- D. Adapt to varied conditions
- E. Maintain good health and grooming

V. Have positive attitudes toward work

- A. Recognize the bases of various attitudes toward work
- B. Hold competence and excellence in high regard
- C. Seek personal fulfillment through own achievements
- D. Value work in terms of societal goals

Taken from: National Assessment of Educational Progress, 1971; J. Stanley Ahmann, Staff Director and James A. Hazlett, Administrative Director



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The format of this guide is such that it can be used in any school system. The purpose is to explore the World of Work through activities designed for use in science. This is not a replacement curriculum but is to be incorporated into the existing course of study.

While many career opportunities are stated, others are implied. This open-ended approach will permit the teacher to modify the activities to meet the needs of particular students.

The following resources are recommended for use in career education activities. These books may already be available in your library or guidance department.

Occupational Outlook Handbook Bulletin #1785

Dictionary of Occupational Titles

Both volumes can be obtained from:
Superintendent of Documents
U. S. Government
Printing Office
Washington, D.C. 20402

Rationale for Middle or Junior High School Science Career Education

One goal of middle or junior high school career education is to develop a positive attitude toward the "World of Work." Every experience from early childhood to maturity contributes to career choice. There should be a positive relationship between school and the World of Work through career awareness education. This will demonstrate relevancy between school and the World of Work. Due to pressure from our society, it is necessary that middle or junior high school students begin to make decisions about careers. This will offer maximum opportunity to stimulate career awareness. Through exploration, children are capable of learning what work is and how it might shape their thoughts, abilities, attitudes and interests through career education. This will aid the school in meeting the needs of ALL students.

The field of science has a considerable influence on our society. The impact has been felt with perhaps its greatest force in the "World of Work." The multitude of jobs existing from the past through the future have either directly or indirectly depended upon the sciences. Some highly trained individuals are directly involved in research and design of materials to be used on a broad scale. Those indirectly involved make use of those concepts developed by these researchers. One great positive factor in career choices in science is its interrelatedness. With such a close relationship, flow from one career area to another is done with relative ease. Thus, job opportunities in areas are only as limited as one's ability to name them. These statements are based on the premise that all jobs are science-related.

Note - This Index Guide is arranged by unit titles and occupational titles. Unit titles tell what occupations are listed in each unit, while occupational titles tell where to find each occupation.

GOALS FOR MIDDLE OR JUNIOR HIGH SCHOOL SCIENCE CAREER EDUCATION

1. To develop a positive attitude toward work
2. To make the student aware of available careers through investigation of the pure and applied sciences
3. To provide the student with information which will prepare him to make rational decisions concerning careers
4. To make the student aware of career interdependence and their benefit to society
5. To provide the student with exploration experiences so that he may acquire necessary skills for various careers

UNIT: Astronomy

LEARNING OUTCOME(S): To identify professional and non-professional astronomy-related careers

Career Education Activity	Activity Evaluation/Comments
RESEARCH - Have the students define solar system and relate specific information about planets to the work of noted astronomers. (i.e. Galileo) REPORTS - Plan oral reports and construct bulletin boards based on researched data. CONSTRUCT TIME LINE - Construct time line showing the evolution of astronomy-related careers. Begin with 1500's and update to the present. DEVELOP TIME LINE - Develop a time line displaying the history of rocketry from early 1500's to the present. REPORT - Report on the developers of the rocket engine. (Ex: Dr. Robert Goddard, Dr. Wernher von Braun) WRITE - Write NASA for materials on space travels. LIST - List some problems connected to space travel and careers that will solve the problems. (Health-doctors, Launch and Re-entry-Engineers, Recovery-U.S. Navy) ROLE PLAY - Select a student to be an astronaut just returning from a moon voyage. This student should research the qualifications of an astronaut and be prepared to answer any questions about his voyage and the equipment needed on this voyage. Choose several students to be newspaper reporters. These reporters can ask questions of the astronaut. Have the reporters construct a newsletter from their findings.	

UNIT: Astronomy

LEARNING OUTCOME(S): To identify professional and non-professional astronomy - related careers.

Career Education Activity	Activity Evaluation/Comments
CREATIVE WRITING - People will someday explore other galaxies. Many authors have written stories describing what we may encounter. Write your own description of our outer space adventures. RESEARCH - U.F.O's. have aroused the curosity of people all over the world. Who would you contact if you saw a U.F.O.? DESIGN - Artists have used the designs of the heavens in fabrics, paintings, drawings, and mobiles. Use information from science class to make an interesting art project.	

UNIT: Chemistry

LEARNING OUTCOME(S): To identify the professional and non-professional careers involved with products of matter - its structure and distribution

Career Education Activity	Activity Evaluation/Comments
TAPED INTERVIEW - Tape an interview with a lab technician-Engineer, Chemist or Physicist. (See suggested format below: These questions might be asked.) 1. Greeting and introduction 2. What is your job? 3. When did you decide to enter this career? Why? 4. What training and/or educational requirements are needed? 5. What are the likes and dislikes of your job? 6. What pre-college subjects have proven valuable to you in your career? 7. DEVELOPED BY INTERVIEWER : Questions about duties of this career 8. If you were choosing your career again, would you choose the same area? Why or why not?	
DISCUSSION - Have small group discussions on interest areas. (Discuss interview describedin number 1 above).	
SPEAKER - Speaker (Chemist, Physicist) Contact Chamber of Commerce for possible speakers.	
BULLETIN BOARD - Bulletin board (Occupations listed above - Trace products from manufacturer to consumer.)	
RESEARCH - Differentiate the following careers: Engineer, Chemist, Physicist, or Lab Tech. use scientific investigation.	
CHART - Develop a chart that would include the following: Manufacturing, Transportation, Marketing, and Distribution. For ex: Trace salt (NaCl) from mines to the kitchen table.	
REPORT - Research an outstanding Chemist and Physicist. Report how their discovery benefited manking.	

UNIT: Chemistry

LEARNING OUTCOME(S):
1. To introduce Environment and Manufacturing while becoming familiar with those involved in development and production of synthetic materials (i.e. Chemist, Lab Tech, factory worker)
2. To identify the professional and non-professional careers involved with products of matter - its structure and distribution

Career Education Activity	Activity Evaluation/Comments
CHART - Make a chart showing the synthetic products of coal and petroleum and relate the careers involved with the development of these products.	
SURVEY- Survey your neighborhood for people working in a job related to the development and production of the products you listed above.	
FILM - Show a film on synthetic products. Identify as many job descriptions as you can.	
INTERVIEW - Tape an interview with a neighborhood druggist.	
FIELD TRIP - Visit a factory producing synthetic fabrics. Construct a bulletin board showing the sequential development of the product. Select any phase of development, production, or marketing and name related career opportunities. What are the necessary qualifications required for any one of these careers?	
ROLE PLAY - Assume that you have just received an award for driving a truck for 20 years without an accident. For 15 of those years you transported highly explosive materials. What training was necessary to prepare you for this type career?	
ROLE PLAY - Pretend you are employed in a police crime lab which analyzes evidence located at the scene of a crime. After role play, investigate educational training and experience necessary to attain such a job.	
EXPERIMENT - The Federal Trade Commission (FTC) set up guidelines for the time it takes for children's clothing to start burning. The companies have met the requirements for sizes 1 to 6X. They are now working on sizes 7 to 14. Test synthetic products for ignition time. List uses of these products and careers involved in the development and production of these products.	
DISCUSSION - One of the great concerns today is man destroying his environment. Insecticides are one of the contributing factors related to the decline of environmental quality. What are some of the careers involved in the correction of this problem? (ex: DDT to kill insects)	

UNIT: Communications

LEARNING OUTCOME(S): To introduce the communications and media related careers (i.e. Engineers, Broadcasters, Switchboard Operators)

Career Education Activity	Activity Evaluation/Comments
LIST - List examples of the following with the related career. (A) Visual - Oral communication (i.e. disc jockey, t.v. announcer, camera man, director) (B) Written communication (i.e. author, business man) (C) Mechanical communication (i.e. computer technician) CONSTRUCT - Make a working model of telephone and telegraph. List careers related to each (i.e. researcher, lineman, operator) SPEAKER - Ask public relations department of the telephone company to talk to the class about installation and upkeep of the telephone. ROLE PLAY - Class will research the duties of the telephone operator. Members will take turns being the operator. INTERVIEW - Interview a disc jockey for the purpose of describing his duties (in class), (See Chemistry for interview format) DEVELOP - Develop a log of the duties of 2 disc jockies for a predetermined time. (Listen to country/western and popular radio stations for 1 week each, a minimum of 30 min. per day.) Compare and contrast the duties of each. Activities are adaptable to T.V. also. RESEARCH - Research communication satellites and set up panel and let class question the panel. ROLE PLAY - Set up a replica of a post office. What job opportunities are open to you? (i.e. clerk, carriers, mail handlers, postmasters, maintenance service workers, vehicle maintenance) Assign each student a job and have him investigate what his duties will be. In cooperation with your school office, allow the students to sort and distribute the school mail and bulletins for a week.	

UNIT: Communications

LEARNING OUTCOME(S): To introduce the communications and media related careers (i.e. Engineers, Broadcasters, Switchboard Operators, et al)

Career Education Activity	Activity Evaluation/Comments
INTERPRET - In coordination with a language class, (i.e. French, German, Spanish) plan a skit about the U.N. You will need someone to play the part of a foreign diplomat, an interpreter, and an American host or hostess. PROJECT - Plan a class newspaper operation. You will need reporters, editors, printers, and distributors. Evaluate your project after its production and have each person describe his/her position, its vital role in the completion of the newspaper, and the educational requirements for his/her job. PANTOMIME - Today many deaf and mute people communicate by using sign language. Pretend your classmates are deaf. You are the teacher. Use your hands, body, and facial expressions to ask questions. See if you can understand their answers. WRITE - In coordination with a language class write letters to government agencies requesting career information. Assign a few students to the role of proof reader and a few as secretaries to type the letters. 1. American Association of Language Specialist 1000 Connecticut Ave. N. W. Suite 9 Washington, D.C. 20036 2. American Society of Interpreters 1013 Vermont Ave. N.W. Room 917 Washington, D.C. 20005 3. Language Service Division U.S. Dept. of State Washington, D.C. 20520	

UNIT: Communications

LEARNING OUTCOME(S): To introduce the communications and media related careers (i.e. Engineers, Broadcasters, Switchboard operator, et al)

Career Education Activity	Activity Evaluation/Comments
WRITE - cont'd 4. Secretariat Recruitment Service United Nations New York, New York 10017 5. Society for Technical Communication, Inc. Suite 421 1010 Vermont Ave. N.W. Washington, D.C. 20005	

UNIT: Ecology

LEARNING OUTCOME(S): To recognize that ecology has had an impact on society, and this has lead to the development and change of careers

Career Education Activity	Activity Evaluation/Comments
RESEARCH - Write to a newly developed community's Chamber of Commerce or city planner (ex: Columbia, Md.). Find out and list the number of careers involved, from planning stage to habitation. CONSTRUCT - Develop a model community considering those factors which contribute to its success. RESEARCH - Investigate the careers involved in the maintenance of the community. ROLE PLAY - Assume the role of one of the ecologists (see preceding activity) and analyze your own environment. Using soil testing kits, test several samples from your school grounds and two other locations. Using water testing kits, test several samples from around your community. Discuss the results of your tests. Place petroleum jelly on an unprepared microscope slide. Put slide in several different locations (preferably rural and urban). After a comparable time period analyze the slides. Explain the reasons for the different substances found on each slide. Using colored and translucent filters, grow plants utilizing a light source and each filter. Compare the results of each experiment. What implications could this have in a greenhouse? Discuss what effect the physical surroundings have on the growth and decline of the Ecosystem. FIELD TRIP - Visit a water treatment facility in your area. Look for the answers to these questions: a. What is the water source? b. How many steps are involved in the treatment process? c. What substances are added to the water? Write a job description for each person involved in the treatment process.	

UNIT: Ecology

LEARNING OUTCOME(S): To recognize that ecology has had an impact on society and this has lead to the development and change of careers

Career Education Activity	Activity Evaluation/Comments
RESEARCH - Study the farms in your county to see what types of crops are grown. List the crops that are grown in similar habitats. What characteristics do they have in common? Ask the farmer about the type of fertilizers he used. What careers would be involved in producing and distributing the fertilizer? Ask the farmer about the growing time of the plant. What careers are involved in developing the plants he is growing. CONSTRUCT - Make a collage with ecology career oriented pictures for a bulletin board. RESEARCH - Research careers that have evolved because of our concern for our environment. Report on the one that interests you most. Write to the Environmental Protection Agency, Wash. D.C. 20402 for information on this subject. GROUP PROJECT - Organize committees to check your school and community for pollution, health hazards, litter, or trash. Have each group report its findings. As a class, select 1 or 2 of the situations to correct. Develop a strategy to deal with the problem, then follow through with the plan. Assign each student the task of describing the duties of his part of the project and developing an appropriate job title.	

UNIT: Energy (Electricity)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
DISCUSS - How many careers can you list that have to make allowances for static electricity?(ex: workers with highly combustible materials -the chain on a gasoline truck, safety engineer, airline ground crews.) DEMONSTRATE - Make working models of parallel and series circuits. List some careers relating to the flow of electrons . (i.e. Electrician's helper, Aircraft and Automotive, Electrician, Cable Splicer, Foreman, Appliance Repairman) CONSTRUCT - Construct and wire a working model of a 4 room house. Demonstrate proper procedure for reading an electrical meter. Students will observe and record readings on their home electrical meter over a predetermined period of time. Compute kilowatt hours used and cost.(Possible rate schedule-.03/kw-hr for first 500, .02/kw-hr for the 1000, .01/kw-hr for all over 1500.) What careers would be involved? (Suggestions: meter reader, office workers) INTERVIEW - Interview P.R. man from electric company. Emphasize the number of careers and the ones that are the easiest to get into. LIST - List as many objects as you can that use magnets. Describe the job opportunities associated with them. For example: Electronics (Telephones, speakers, electric motors), Construction (crane operators in junkyard), Veterinarian (removing metal from livestock)	

UNIT: Energy (Electricity)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
DISCUSSION - Obtain a diagram of the ignition system of a motor vehicle. Study how ignition is produced in this vehicle. Study the major parts of this ignition system and list the careers involved in the production and maintenance of these parts. RESOURCE PERSON - Have an auto mechanic specializing in automobile electrical system visit school. Examine different types of electrical circuitry as well as common problems. What training is required to obtain a job in this career area?	

UNIT: Energy (heat)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
RECORD - Learning Center: Set up an area where children may compare the Fahrenheit and Celsius scale. Have one child assume the role of a lab technician and another be an assistant. Have the children measure and compare the temperature of boiling water, ice, and luke-warm water. Instruct the assistant to verify the technician's results. COMPUTE - A lab tech. has to keep records. If he had a sample at 98.6 F. compute the Celsius equivalent. INVESTIGATE - Specify two or more types of lab tech. Investigate and describe the educational requirements and job responsibilities of each. REPORT - Keep a record of the weather for five days. Report on a weather man (meterologist). In what ways are his duties related to evaporation and condensation? CRITIQUE - Investigate and critique the responsibilities and requirements of three of the following: Physical Meteorologist, Dynamic Meteorologist, Industrial Meteorologist, or Meteorological instrumentation specialists INVESTIGATE - Investigate the effect heat has on expansion. List the careers that would have to consider expansion and contraction in the construction cluster.(ex: Plumber and Pipefitters, Road Construction, Building Construction, Railroad, Bridge Construction, Electric Power Lineman) TAPE - Tape interview with city engineer about the effect of the chloride on ice in the winter time. Included in the interview would be the people responsible for procurement and distribution. 32 INTERVIEW - Tape interview with a service station attendant about how much anti-freeze is needed for our area. (See Chemistry for format.)	

UNIT: Energy (heat) cont'd

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
EXPERIMENT-With a thermometer, beaker salt and crushed ice, the class will take melting and freezing point of water. Add salt, vinegar, alcohol and baking soda to water and find what happens to the freezing point. Having completed these experiments tell why your results would be important to the city engineer and service station attendant. DEMONSTRATE - Look at a thermostat and list the people that are involved in making it. (ex: miner-getting the metal ore out of the ground, truck driver-taking the ore to the foundry) Heat a bimetallic strip. What happens and why do you think it happened? Explain how this knowledge would help you understand the workings of a thermostat. CREATE - Obtain some ceramic clay. Make pots and have them fired. Discuss how they have changed. Glaze your projects. Talk with an artist about the importance of heat in relation to art. WALK - Take the class to the boiler room in your school. Have them observe the way in which their building is heated. The custodian would be a good resource person. DISCUSS - Have the children investigate how their own home is heated. Find out what company installed their heating unit. Who is responsible for the refueling and maintenance of their furnance? CONSTRUCT - Solar heaters are being researched by many companies as a means of heating our homes in the future. Using cellophane, tin foil, and cardboard construct a community of the future. Who must be hired to make your community a reality? (ex: city planner, engineers, draftsman, construction workers)	

UNIT: Energy (heat)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
FIELD TRIP - If there is a bakery in the area you might take your class there to show how heat is used in industry. Ask who must be hired to run their business. ROLE PLAY- Secure brochures from refrigeration and air condition manufacturers. Have a student pretend to be an air conditioning salesperson and answer customers' questions on problems in their homes. 1. Why does the de-humidifier in the basement lower the heat level there as well as remove moisture? 2. Why does the air-conditioner sitting in a corner window freeze itself up, put an inch of ice over its cooling surfaces? 3. Why does the temperature rise in a room where a humidifier is working? INTERVIEW - Interview a person who uses a thermometer. (ex: your school nurse) Write key statements about his job requirements and duties. DISCUSS - Talk with the school cafeteria manager about calories in relation to meal planning.	

UNIT: Energy (Nuclear)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
RESEARCH - Research the use of radioactivity in industry. Example: (1) Review local industries for the ones that use radioisotopes to determine the destinations of their waste. (2) Request information from local industries on radioisotopes used in testing for flaws and thickness of materials. (3) Inquire about the special metals used with radioactive materials. The materials they use are made to withstand high temperatures, and a low absorption of radiation. Ask the industries you requested information from, about the training, skills, and requirements necessary for careers directly related to the radioisotopes above.	
RESEARCH - Research the use of radioactivity in the production of useful energy. Example: (1) Write the Atomic Energy Commission (AEC) for information on nuclear powered electric plants around the nation. Choose and research one career that is directly involved in the production of electricity from nuclear energy. Interview a PR person from a nuclear power plant for careers and public safety. (2) Write AEC for information on nuclear powered vessels. Ask about skills, training and educational requirements necessary for job opportunities specifically involved with nuclear power. Interview your naval recruiter for information about placement on a nuclear vessel. Use model as a means of motivation.	
RESEARCH - Research the use of radioactivity in medical diagnosis and treatment. Visit or write hospital for information on diagnosis. (Example: Iodine used to determine thyroid problems) Secure information on the treatment of disorders. (Example: Cobalt is used to treat cancer.)	

UNIT: Energy (Sound)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
RESEARCH - Research and report on some of the careers involved in the diagnosis and correction of hearing problems. (ex. Audiologist for diagnosis, Hearing Aid for correction, Improvements on the Hearing Aid)	
RESEARCH - Suppose you had a speech impediment. Who would you consult for correction? (ex: teeth problem-Orthodontist and Speech Therapist)	
DESCRIBE - Describe the properties of these materials that prevent sound transference. List careers involved with theory and installation of acoustical materials. (ex: Acoustical engineer designing an auditorium or laborer installing an acoustical drop ceiling)	
ROLEPLAY - Have one or two student pretend they are acoustical engineers. Responsible for acoustical qualities of a particular room in the school, they must identify acoustical problems the room may have and suggest possible remedies. If a particular room has some good acoustical properties, they may list these also. Using a resource book, identify the materials used for sound proofing.	
RESEARCH - Write a research paper on Sonar and Radar (including the development of Sonar and Radar. See Language Arts section for work on acronyms.)	
LIST - List the occupations associated with Sonar and Radar (ex: Captain on a fishing boat using Sonar to locate fish. Policemen using Radar to apprehend speeders.)	
INTERVIEW- Talk to Armed Forces Recruiter to familiarize students with service careers related to Sonar and Radar.	
RESEARCH - Research the mechanical devices that reproduce sound. (ex: tape recorder record players, films) Identify the careers involved in production of these devices. Research the devices used to create different sound effects. Describe how the sound effect is created. Identify careers in this field such as movie sound technicians.	

UNIT: Energy (Sound)

LEARNING OUTCOME(S): To discover man's ever increasing need for energy and recognize the career possibilities

Career Education Activity	Activity Evaluation/Comments
CONSTRUCT - Make a model of a musical instrument. Discuss the possible related career opportunities that could go with your musical instrument. INTERVIEW - Interview a music teacher to obtain information about career opportunities in music. RESEARCH - Identify your favorite recording artist and research his career. Describe his professional development. RESEARCH - Research assignment to identify problems related to noise pollution. Make cartoons illustrating the harmful effects of sound on the environment. Follow up: List the careers involved in the above. (ex: Cartoonist, Safety Engineer)	

UNIT: Fluid Pressure

LEARNING OUTCOME(S): To recognize the career possibilities related to the study of fluid pressure

Career Education Activity	Activity Evaluation/Comments
ROLE PLAY - Have student pretend to be a salesperson. Discuss the reasons for tire pressure in the different type of tires. Compare the radial tire to the bias tire. Develop an advertising campaign to support your findings. RESEARCH - Explore the responsibilities and requirements of 3 of the following: Physical Meteorologist, Dynamic Meteorologist, Industrial Meteorologist, and Meterological Instrumentation specialists. RESEARCH - Explore careers that make use of air pressure. (ex: Construction industry using pneumatic instruments, Marine Science for underwater exploration) INTERVIEW - Interview someone from the field of aviation. Include in it how this field is related to Air Pressure. (ex: Pilot, navigator) OBSERVE - Examine heavy equipment, such as a bulldozer. List the parts that make use of fluid pressure. What careers are involved in the production and maintenance of these parts? CONSTRUCT - Construct toys that rely on air pressure. What jobs are involved in the commercial production of toys? What qualifications and training would be necessary for these jobs?	

UNIT: Geology

LEARNING OUTCOME(S): To introduce & reinforce the following career areas: Agri-Business, Natural Resources & Environment

Career Education Activity	Activity Evaluation/Comments
FIELD TRIP - Visit a mine or quarry to locate fossils and study rock strata. List observed and related career opportunities. (ex.heavy equipment operator, your bus driver geologist)	
RESEARCH - Using resource media trace fossils from diggings to museum. See who can find the greatest number of careers involved in this operation. (ex: Excavation, Transportation, Dating)	
RESEARCH - Research and develop a chart on the formation of petroleum. Locate the major oil fields. Emphasize the type of rocks in that area. Divide the class into three groups. One group would report on location and removal, another group report on transportation and refining, and the third group report on distribution and marketing of petroleum products. List some careers involved in the above. (ex: Petroleum Geologist, Pipefitter, Maintainance Men, Shipping Clerk, Service Station Attendant)	
TEST - Develop a hardness test for rock and mineral samples. Why is hardness an important characteristic to know when developing uses for rocks and minerals?	
INVESTIGATE - Choose a mineral such as asbestos, quartz, silicon, Trace the mineral from mine to treatment to finished product. What types of jobs are involved in the processing of the mineral?	
CONSTRUCT - Find a colorful stone. Construct a piece of jewelry, an ornament, or a paperweight incorporating the stone. What skills are involved in this type of work? What are the related career opportunities?	
DISCUSS - Why would a geologist be consulted when erecting a building, drilling a well, or looking for oil? In what other operations might a geologist be involved?	
RESEARCH - The field of geology offers wide opportunities for professional employment. Determine with what aspect of geology each of the following would deal:	

UNIT: Geology (cont.)

LEARNING OUTCOME(S): To introduce and reinforce the following areas Agri-Business, Natural Resources and Environment

Career Education Activity	Activity Evaluation/Comments
RESEARCH - cont'd a. paleontologist b. seismologist c. geophysicist d. petrographer e. glaciologist f. mineralogist g. petroengineer h. volcanologist i. geomorphologist	

UNIT: Living Things (General)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
OBSERVATION - Look at onion & cheek cells to determine the difference between plant and animal cells. What are some careers that require the use of a microscope? What educational-technological requirements are necessary for the above? (Ex. Biologist, Pathologist, Microbiologist, Medical Technologist, Medical Laboratory Assistant) FIELD TRIP - Visit a zoo. List the numerous professional and non-professional career opportunities offered at a zoo. CONSTRUCT - Build a model zoo with figurines to depict these occupations. FIELD TRIP - Visit a farm and list professional and nonprofessional occupations. (Optional - Compare and contrast the careers listed in previous field trip. Choose any one career and investigate educational requirements and necessary training.)	

UNIT: Living Things (General)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
FIELD TRIP - Visit a greenhouse. List and describe the jobs involved in its operation. CHART - Make a poster showing models or actual parts of plant which are used for food. List the related careers. LEARNING CENTER - Learning Center dealing with landscaping (ex: set up different structural designs. Allow students to do the landscaping. What would be involved in doing landscaping?) Let them do a landscape plan for their school. RESEARCH - List the duties and qualifications of a taxonomist. How does his profession relate to and rely on other careers in bioscience? WANT ADS - Make a collection of newspaper ads pertaining to jobs associated with living things.	

UNIT: Living Things (Plant Life)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
RESEARCH - What are some uses of antibiotics? What are the requirements for the careers that use antibiotics?	
RESEARCH - Athletes foot is caused by a fungus. List as many commercial treatments as you can that are used for treating it. What careers are involved with marketing and distribution of these treatments?	
IDENTIFY- Identify the mushrooms used commercially. What is involved in the production of these mushrooms?	
REPORT - How do the following industries make use of fermentation: liquor, wine, beer and bakeries?	
RESEARCH - Man obtains dyes and paints from lichens. What careers make use of dyes and paints?	
DEMONSTRATE - Demonstrations: set up 3 plants. (1) 50-50 mixture of peat moss and top soil. (2) Clay (3) Topsoil What is the reason for the growth difference? What implications would this have in a nursery?	
DEMONSTRATE - Divide the class into two groups. One group will bring in flowers, one group will bring in ferns. Make floral arrangements with and without ferns. Which is more appealing to the eye?	
REQUEST Get someone from a lumber company to come in and talk on the availability of lumber.	
REQUEST - Have a P.R. man from a papermill talk on processing of paper. Picture the types of wood in products you have in your home, and make a list of careers that are involved in woodwork.	

UNIT: Living Things (Plant Life)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
DRAW - Draw a chart showing the steps in the processing of a tree from the forest to an end product. EXPLORE - Explore the careers associated with furniture making. REPORT - Report on a career you found most interesting.. OBSERVE - Observe an orchard when they are grafting trees. Observe and make a report to the class on this career. INTERVIEW - Have an agricultural agent speak to the class about his job description. RESEARCH - Make a report on how Luther Burbank contributed to the improved production of fruits and vegetables.	

UNIT: Living Things (Plant Life)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
RESEARCH - List the types of paper products you have in your home, and make a list of careers that are involved with paper. CONSTRUCT - Construct a collage of the by-products we get from trees. Explore the careers that are involved in these products. (ex: turpentine)	

UNIT: Living Things (Animals)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
RESEARCH - There are numerous careers involved with the invertebrates. List some of the careers involved with the following: (1) sponge industry (ex: ship's Captain, diver) (2) Coral (ex: coral as a decorative piece) (3) Parasitic invertebrates (Round worms, tick) (4) Food industry(clams, oysters, snails) (5) Pest control (exterminator, entomologist) ROLE PLAY - Pretend you are hired by a magazine (ex.National Geographic) to photograph some chordates at a game reserve. 1. List the characteristics these animals have in common. 2. Using a world map, place pictures of animals from magazines and newspapers on appropriate continents with respect to their location and migration habit. 3. Interview some of the people employed by the reserve. What are their educational requirements and job responsibilities? 4. Prepare a manuscript with pictures to submit to your editor. FIELD TRIP - Visit a fish hatchery. Explore the careers that are involved in growing fish. ROLE PLAY - Suppose you own a pet shop. What type of animals would you sell? What job activities would you be involved in? (ex: animal grooming) RESEARCH - How has the decline of certain animal species affected careers in the following industries? 1. Jewelry 2. Clothing (ex. furs, shoes) 3. Leather (ex. recreation, baseball) 4. Food (ex. domestic animals : meat, milk, cheese)	

UNIT: Living Things (Animal Life)

LEARNING OUTCOME(S): To recognize the careers which stem from man's interrelation with other living things

Career Education Activity	Activity Evaluation/Comments
ROLE PLAY - You are Gregor Mendel. Report to the class on your inheritance studies.	
ROLE PLAY - Acting as a lab technician, hatch some brine shrimp eggs. Record the development of them every 12 hrs. during incubation.	
INTERVIEW - Ask a biology teacher to explain the requirements for his profession.	
RESEARCH - Astigmatism, myopia, crossed eyes, and hyperopia are eye defects. How would an Optometrist correct these defects?	
PHOTOGRAPHY - Study the elements of taking good pictures. As a class project make an album of wildlife animal pictures . Explain planning necessary to create proper balance in each photo. Critique the characteristics of each animal as well as life habits. What would be some other aspects of photography, related to wildlife, a photographer might utilize?	
PHOTOGRAPHY - Develop animal pictures taken by the class. Examine the chemicals utilized in film processing. Where does one obtain these ingredients? Have class investigate careers involved in film processing and picture enlargement.	
INTEREST CENTER - Collect pictures of some ordinary pets as well as some unusual ones. Develop activities discussing proper care for each different animal. Include common illnesses and the role of the veternarian in animal care. (Optional - What are the educational requirements for this profession?)	
EXPERIMENT- Study a blood sample. How would a Doctor use this information in diagnosis? What other careers could the doctor make use of in diagnosis? (ex: X-Ray Tech, et al) What careers would he make use of in curing the patient? (Ex: Nurse, RN, LPN, Nurses Aide, Pharmacist)	
ROLE PLAY - At 208 Main St., USA, 6:30 A.M. June 21, 19__, Rocky Mountain spotted fever was diagnosed. Describe the careers involved in the prevention of an epidemic.	

UNIT: Living Things (Structures and Functions of Man)

LEARNING OUTCOME(S): To recognize the careers associated with the structures and functions of man

Career Education Activity	Activity Evaluation/Comments
INTERVIEW - Ask the police department to explain the uniqueness of each individual's finger prints and how they are use in identification. List the requirements for a law enforcement officer.	
RESEARCH - What is a dermitologist? What are his educational requirements?	
INVESTIGATION - What are the duties and training required of a cosmetologist?	
INTERVIEW - Contact your local health department and arrange an interview with a physical therapist.	
RESEARCH - Research the industries that prepare non-prescription medicines for the digestive system.	
EXPERIMENT - Type your blood and research the skills required to become a lab tech.	
RESEARCH - Research respiratory ailments. Identify contributory factors. What is being done to eliminate these factors? Who is involved in eliminating these factors? How?	
INVESTIGATION - Study the methods of waste disposal. What materials are involved in disposing of waste? What are the duties of the operators?	
REPORT - Trace the history of a hearing aid. Research the careers that are related to its building and development.	
INTERVIEW - Ask the health nurse to get you an interview with an audiologist.	
REPORT - Report on the hormone insulin and its use. List the careers involving manufacturing and administering insulin.	

UNIT: Simple Machines

LEARNING OUTCOME(S): To discover the career opportunities associated with the use of machines

Career Education Activity	Activity Evaluation/Comments
DESIGN - Design a simple machine. Using material around the house, make a working model. Try setting up an assembly line to produce your machine. Who must you employ? DIAGRAM - List and diagram 10 examples of the simple machines found in the home. Label the force and resistance on each. Tell who manufactured each. Write to the company and obtain some information about one of the products. Trace the steps from development to home use. Picture the career involved with each step. FIELD TRIP - Go to a construction project. Write at least one example for each of the simple machines and tell what it is doing. Are these jobs for men only? RESEARCH - Make a list of the careers involved in building a house, and describe how they depend on each other. INTERVIEW - Taped interview with industrial arts teacher about the careers in construction. EXAMINE - Many hand tools are simple machines. Bring to class various tools and determine what simple machines are involved. For each tool, name the jobs that might make use of the tool. RESEARCH - The theories of simple machines are used in many Professional Sport Careers. (i.e. Baseball:batting; Track and Field; Pole Vaulting; Golf: driving) Research the uses of simple machines in the sports which interest you.	

UNIT: Weather

LEARNING OUTCOME(S): To become familiar with the many careers related to the observation and prediction of the weather

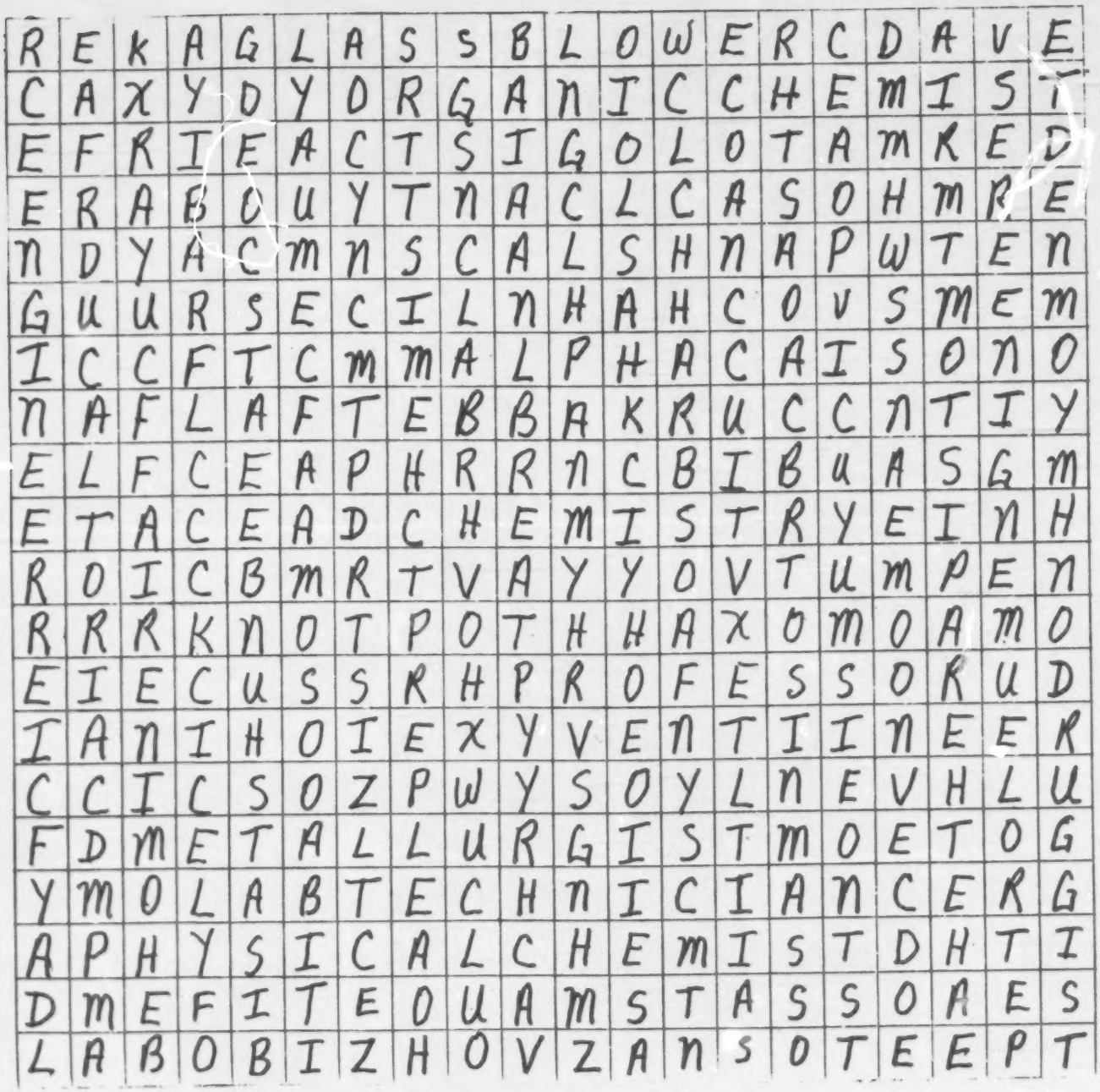
Career Education Activity	Activity Evaluation/Comments
PROJECT - Set up a weather station(s). If commercially produced equipment is not available, adequate instruments can be made by teacher or students. Instructions for making anemometers, barometers, hygrometers, rain guages and thermometers can be found in many textbooks. Take readings at the same time each day for at least a week. Keep records in chart form and make predictions. Compare your forecast with the actual weather. Extend the activity into the career area by discussing or writing answers to these questions: a. In what ways did you act like a meterological instrumentation specialist who develops weather instruments? b. How did you behave like a weather station attendant who takes readings and forwards them to the U.S. Weather Bureau? c. What did you have in common with a synoptic meterologist who forecasts the weather? d. How would your records be used by a climatologist who analyzes records to determine general weather patterns? e. What services are offered by an industrial meterologist? (ex. forecasts for individual companies, pollution control, cloud seeding)	
LISTEN - Listen to a radio tuned to a weather frequency and compare your predictions with it for a week.	
RESEARCH - Have students list local businesses and industries. Show ways in which these establishments are affected by the weather reports. (ex. bread manufacturers, barometric pressure, airports, wind direction and speed)	
WRITE - Write to the U.S. Government Printing Office, Washington, D.C. 20402 and request information on careers in weather prediction.	
LIST - During your study, compile a list of terms with which a weatherman should be familiar. (Ex. isobar, isotherm, front, and others)	
ROLE PLAY - Have a student play the part of a TV weatherman. He can construct weather maps and compile daily reports. He can record his findings on charts and prepare a script to be delivered to the class. This is a good opportunity to investigate TV productions as well.	

ACTIVITIES

(1) Hidden Words
   (a) Chemistry
   (b) Ecology
   (c) Geology
   (d) Living Things
   (e) Simple Machines

(2) Career Games
   (a) Zoology (Animals Business)
   (b) Man and his functions (check-up)

CHEMISTRY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E F R I E A C T S I G O L O T A m K E D
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G u U R S E C I L n H A H C O v S m E m
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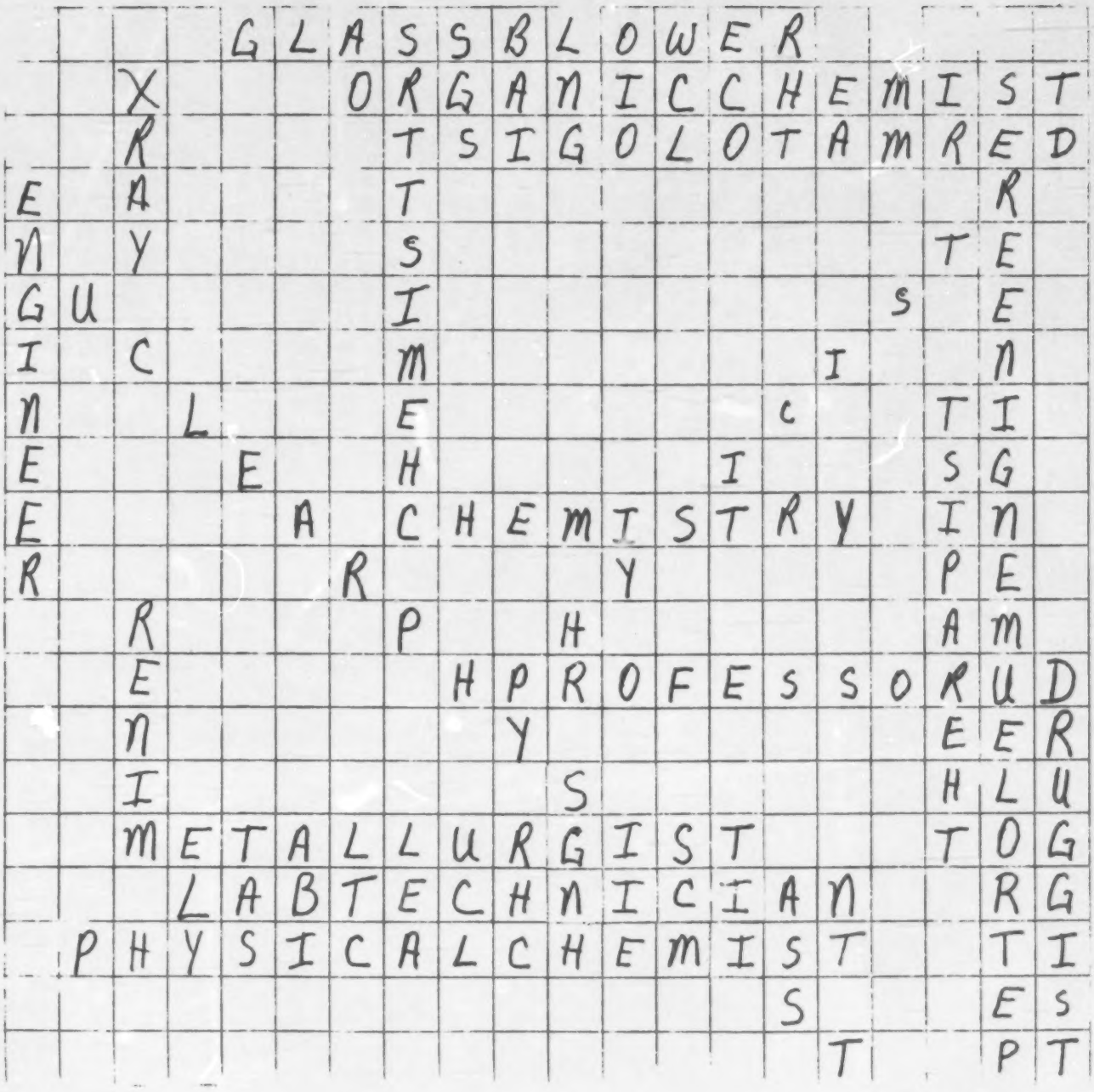
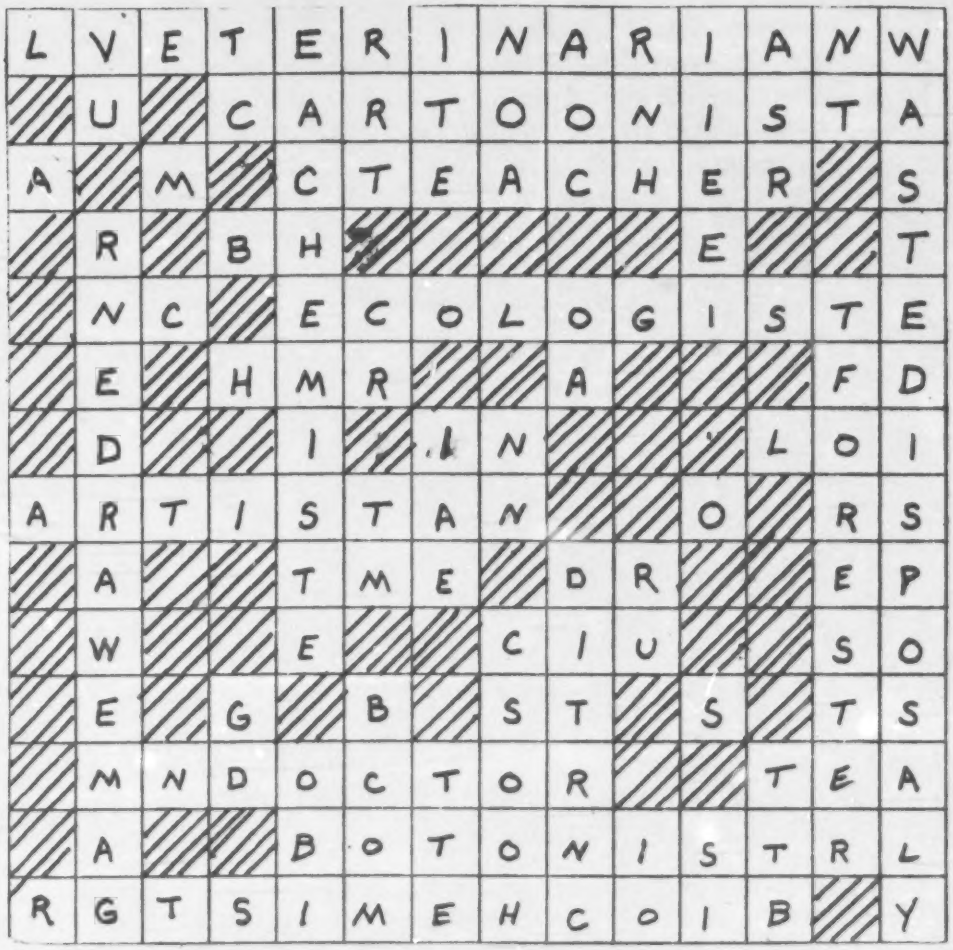
CHEMISTRY



KEY

Therapist
Chemistry
Chemist
Lab technician
Physicist
Druggist
Dermatologist
Nuclear physicist
Engineer
Miner
Glass blower
Metallurgist
Petroleum Engineer
Physical Chemist
Organic Chemist
Professor
X-Ray

ECOLOGY


L V E T E R I N A R I A N W
U C A R T O O N I S T A
A M C T E A C H E R S
R B H E T
N C E C O L O G I S T E
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D I N L O I
A R T I S T A N O R S
A T M E D R E P
W E C I U S O
E G B S T S T S
M N D O C T O R T E A
A B O T O N I S T R L
R G T S I M E H C O I B Y

KEY

Architect
Artist
Biochemist
Botanist
Cartoonist
Chemist
Doctor
Ecologist
Florist
Forester
Forest Ranger
Game Warden
Lumber Industry
Range Manager
Teacher
Veterinarian
Waste Disposal

ECOLOGY

L	V	E	T	E	R	I	N	A	R	I	A	N	W
R	U	Z	C	A	R	T	O	O	N	I	S	T	A
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S	N	C	A	E	C	O	L	O	G	I	S	T	E
B	E	S	H	M	R	A	T	A	M	O	J	F	D
C	D	B	N	I	C	I	N	T	G	C	L	O	I
A	R	T	I	S	T	A	N	L	I	O	B	R	S
Q	A	M	B	T	M	E	S	D	R	Q	H	E	P
S	W	R	C	E	Q	I	C	I	U	Z	V	S	O
R	E	S	G	M	B	G	S	T	U	S	O	T	S
T	M	N	D	O	C	T	O	R	H	B	T	E	A
W	A	E	T	B	O	T	O	N	I	S	T	R	L
R	G	T	S	I	M	E	H	C	O	I	B	Z	Y

GEOLOGY

G	F	T	S	I	G	O	L	O	E	G	O	R	T	S	A	R	S	M	O
E	G	E	O	M	A	G	N	E	T	I	C	I	A	N	E	A	I	E	Q
O	B	N	C	Y	M	O	N	S	T	E	O	G	S	I	O	N	U	T	R
L	C	T	G	L	A	C	I	O	L	O	G	I	S	T	E	V	Y	E	A
O	X	O	R	D	F	S	B	C	D	W	K	N	I	R	N	M	D	R	Y
G	E	O	C	H	E	M	I	S	T	K	J	T	A	K	E	D	X	O	J
I	R	Y	E	D	K	E	E	S	V	I	M	L	S	H	L	J	M	L	T
S	A	W	O	Z	Q	T	I	W	D	J	O	G	O	W	E	F	E	O	Y
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Y	A	T	I	U	F	V	R	E	E	N	I	G	N	E	O	R	T	E	P
J	U	E	S	T	R	A	T	I	G	R	A	P	H	E	K	Y	C	W	C
R	K	Y	T	S	T	S	I	G	O	L	O	H	P	R	O	M	O	E	G

G T S I G O L O E G O R T S A M
E G E O M A G N E T I C I A N I E
O S N T
L G L A C I O L O G I S T E E
O S R R
G E O C H E M I S T A O
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S O O
T E S P E T R O G R A P H E R G
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S O I L C O N S E R V A T I O N I S T
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M I N I N G E N G I N E E R
V O L C A N O L O G I S T
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O T S I G O L O R D Y H
T S I G O L O T N O E L A P
I R E E N I G N E O R T E P
S T R A T I G R A P H E R
T T S I G O L O H P R O M O E G

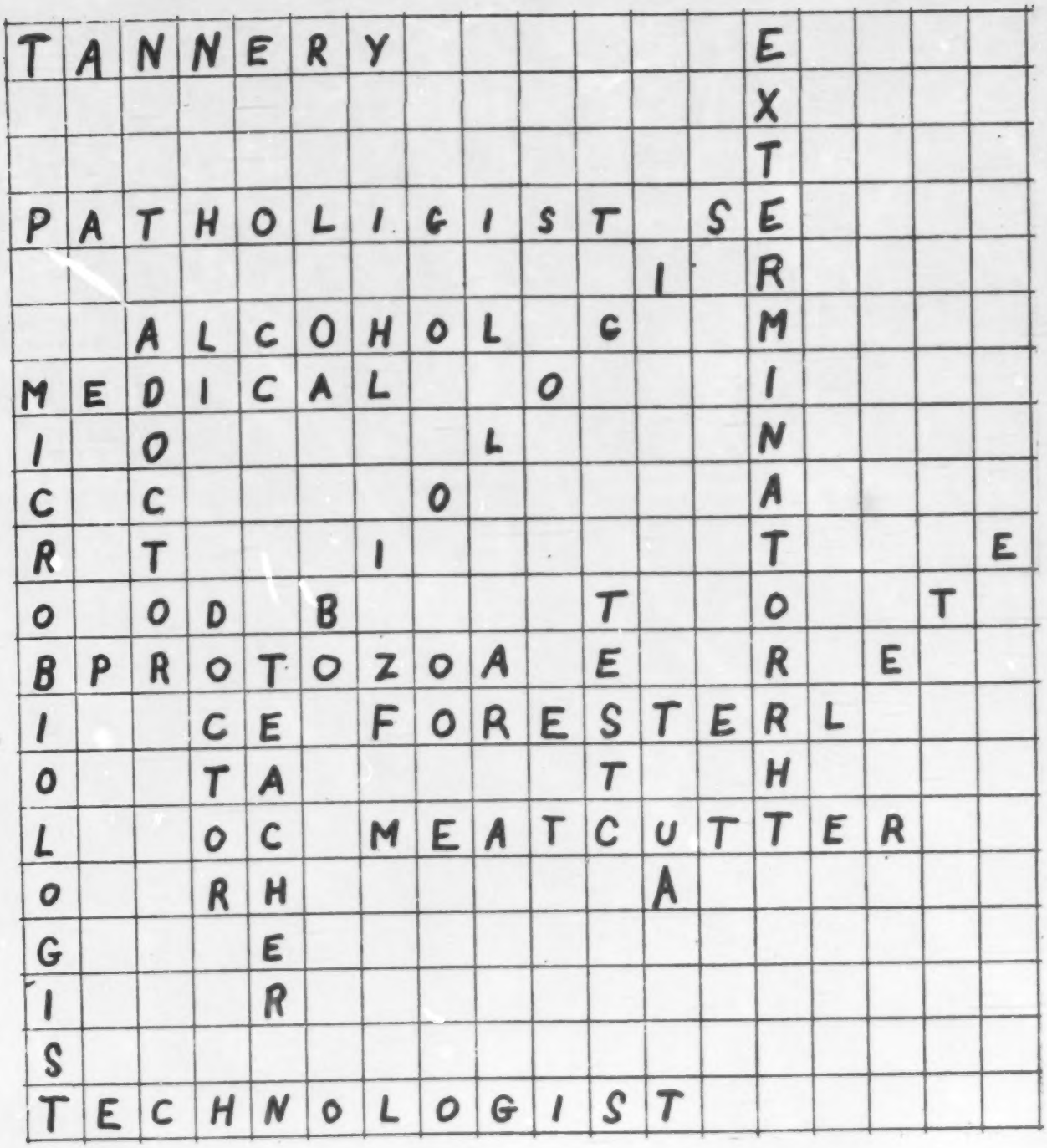
GEOLOGY : KEY

1. astrogeologist
2. forester
3. geochemist
4. geodesist
5. geologist
6. geomagnetician
7. geomorphologist
8. glaciologist
9. hydrologist
10. meterologist
11. mineralogist
12. mining engineer
13. oceanographer
14. paleontologist
15. petro engineer
16. petrograhper
17. seismologist
18. soil conservationist
19. stratigrapher
20. volcanologist

LIVING THINGS

DIRECTIONS: Circle the fifteen words associated with living things.

LIVING THINGS

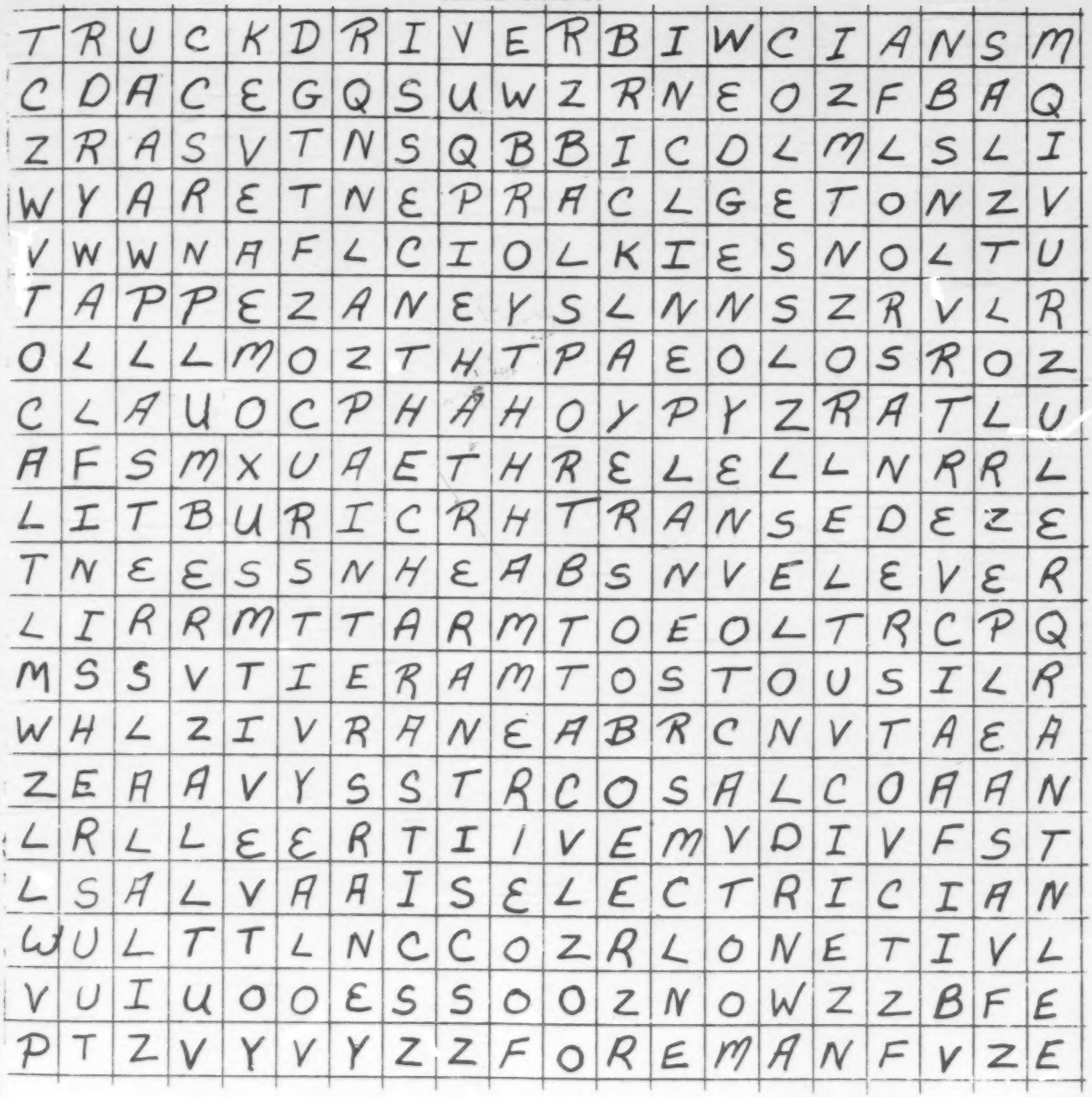


alcohol
Meat cutter
Doctor
Biologist
tannery

medical
athlete
Exterminator
Microbiologist
Teacher

Forester
Patholigist
Librarian
test

SIMPLE MACHINES



Truck driver
Lever
Drywall finishers
Incline planes
Plumber
Carpenter
Masons
Painters
Electricians
Hammer
Pulley
Wedge
Foreman
Bricklayers
Floorsander

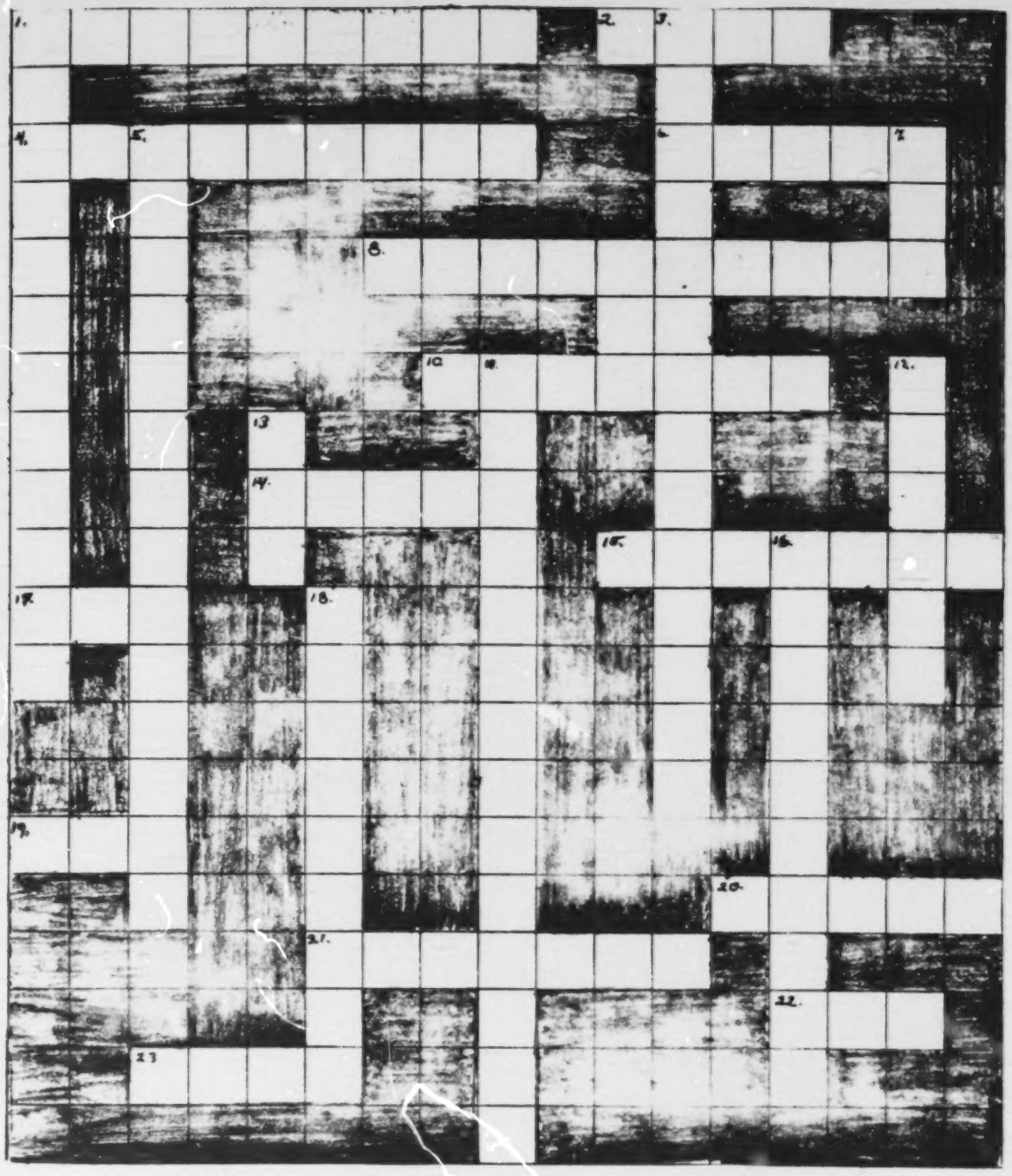
41

SIMPLE MACHINES

Truck driver
Lever
Drywall finishers
Incline planes
Plumber
Carpenter
Masons
Painters
Electricians
Hammer
Pulley
Wedge
Foreman
Bricklayers
Floorsander

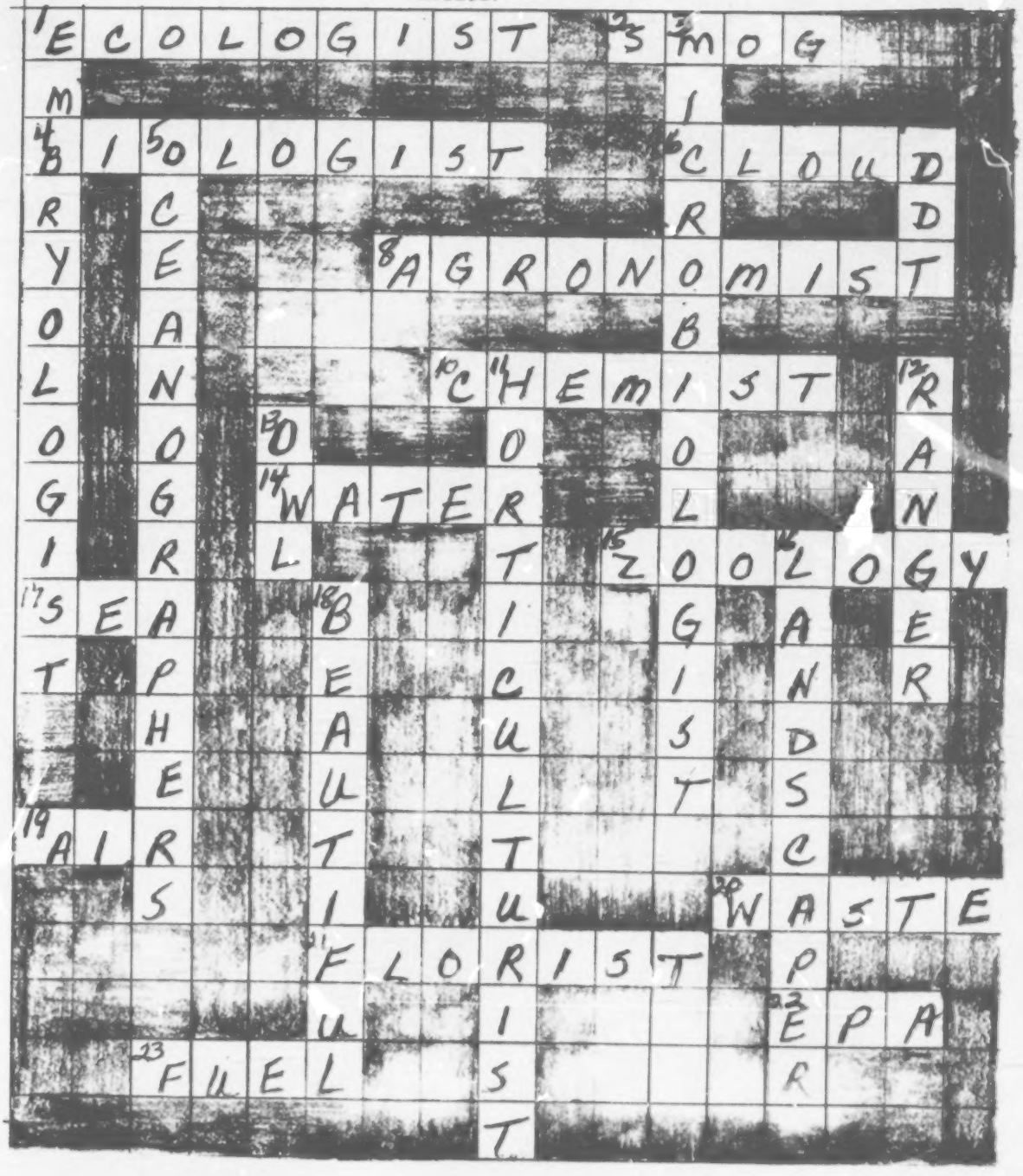
42

ECOLOGY



See definitions on the following page.

ECOLOGY


1 ECOLOGIST
2 3 MOG
M I
4 BIOLOGIST 5 CLOUD
RYOLOGIST CEAN OGRAPHER ICE AGE
6 R D
8 AGRONOMIST
B
10 CHEMIST 12 R
11 HEM
13 O A
14 WATER LAND
15 ZOOLOGY
17 S 18 BEAUTIFUL
TAIGA
19 AIR
20 WASTE
21 FLORIST
22 EPA
23 FUEL

KEY

CROSSWORD
(Ecology)

ACROSS

1. Scientist who studies ecology
2. Smoke and fog
4. One who studies living things
6. Cumulus _____
8. One who grows, breeds and improves field crops
9. earth or ground
10. Scientist who studies chemicals
14. H_2O
15. The study of animal life
17. Mediterranean _____
19. Living things need this .
20. To use foolishly
21. One who arranges and sells flowers
22. Abbreviation for Environmental Protection Agency
23. Something that will burn

DOWN

1. Scientist that studies the development of an organism from a fertilized egg through hatching process
3. Life scientist who study microscopic organisms
5. One who studies the ocean
7. A pesticide
11. Person who works with orchard and garden plants
12. Forest _____
13. Who says, "Give a hoot, don't pollute"?
16. One who plans and arranges trees and shrubbery around buildings
18. Keep America _____.

INDEX OF UNIT TITLES

I. Astronomy — pages 1-2
- Artist
- Astronaut
- Astronomer
- Author
- Engineer (launch and re-entry)
- Health doctor

II. Chemistry — pages 3-4
- Chemist
- Druggist
- Engineer (chemist)
- Lab-technician
- Physicist
- Police (lab technician)
- Truck driver

III. Communications — pages 5-7
- Author
- Businessman
- Cameraman
- Computer technician
- Diplomat
- Director
- Disc Jockey
- Host/Hostess
- Interpreter
- Language teacher
- Lineperson (telephone)
- Mail handler
- Maintenance service worker
- Newspaper distributor
- Newspaper editor
- Newspaper printer
- Newspaper reporter
- Operator (telephone)
- Postal carrier
- Postal clerk
- Postal inspector
- Postmaster
- Proof reader
- Researcher (telephone)
- Secretary
- Teacher of the deaf
- T.V. announcer
- Vehicle maintenance worker

IV. Ecology — pages 8-9
- Farmer

V. Energy (Electricity) pages 10-11
Aircraft engineer
Airpine ground crew
Appliance repair person
Automotive engineer
Auto mechanic
Cable splicer
Electrician
Electrician's helper
Foreman
Meter reader
Office worker
Public relation person
Safety engineer
Veterinarian

VI. Energy (Heat) pages 12-14
Artist
Baker
City engineer
City planner
Construction worker
Custodian
Draftsman
Electrical power line person
Engineer
Foundry worker
Lab assistant
Lab technician
Meteorologist
a. Dynamic
b. Industrial
c. Instrumentation specialist
d. Physical
Pipefitter
Plumber
Salesperson
School cafeteria manager
School nurse
Service station attendant
Truck driver

VII. Energy (Light) pages 15-16
Artist
Astronomer
Communications specialist
Interior decoration
Medical scientist
Naval recruiter
Opthamalogist
Optician
Optometrist
Psychologist
Public relations person
Traffic control director
X-ray technician

VIII. Energy (Sound) pages 18-19
Acoustical engineer
Armed Forces recruiter
Audiologist
Captain (fishing boat)
Cartoonist
Laborer
Movie sound technician
Music teacher
Orthodonist
Policeman/woman
Recording artist
Safety engineer
Speech therapist

IX. Fluid Pressure page 20
Dynamic meteorologist
Industrial meteorologist
Meteorological instrumentation specialist
Navigator
Physical meteorologist
Pilot
Salesperson

X. Geology pages 21-22
Bus driver
Geologist
Geomorphologist
Geophysicist
Glaciologist
Minerologist
Maintenance personal
Paleontologist
Petroengineer
Petroleum geologist
Petrographer
Pipefitter
Service station attendant
Shipping clerk
Seismologist
Volcanologist

XI. Living Things (Animals) pages 28-29
Biology teacher
Captain (ship)
Diver
Entymologist
Exterminator
Lab technician
Licensed practical nurse
Nurse's aide
Optometrist
Pharmacist
Photographer
Registered nurse

Veterinarian
X-ray technician

XII. Living Things (General) pages 23-24
Biologist
Corn farmer
Machine operator
Medical lab assistant
Medical technologist
Microbiologist
Pathologist
Taxonomist
Truck driver

XIII. Living Things (Man) page 30
Audiologist
Cosmetologist
Dermatologist
Lab technician
Law enforcement officer
Physical therapist

XIV. Living Things (Plant) pages 25-27
Agricultural agent
Public relation person

XV. Simple Machines page 31
Industrial arts teacher

XVI. Weather page 32
Climatologist
Industrial meteorologist
Meteorological instrumentation specialist
Synoptic meteorologist
T.V. weather reporter

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